CLAIMS

1. A voice storage system comprising:

a circuit switched network for performing communication by circuit

5   switching;

a first telephone which is connected to said circuit switched

network and performs voice communication;

an exchange which is connected to said circuit switched network

and performs voice switching;

10   one or a plurality of private telephones which are connected to

said exchange and perform voice communication; and

a voice storage apparatus which is connected to said exchange,

stores voice in at least speech communication recording by voice data and

an external message transmitted from said exchange, and establishes

15   synchronization between said voice data and said external message

transmitted from said exchange, thereby controlling storage of speech

communication voice.

2. An exchange of a voice storage system,

20   said voice storage system comprising:

a circuit switched network for performing communication by circuit

switching;

a first telephone which is connected to said circuit switched

network and performs voice communication;

25   an exchange which is connected to said circuit switched network

and performs voice switching;

one or a plurality of private telephones which are connected to said exchange and perform voice communication; and

a voice storage apparatus which is connected to said exchange,

5 stores voice in at least speech communication recording by voice data and an external message transmitted from said exchange, and establishes synchronization between said voice data and said external message transmitted from said exchange, thereby controlling storage of speech communication voice,

10 said exchange comprising:

network communicating means for performing connection with said circuit switched network;

circuit switching means for performing circuit connection between said circuit switched networks or terminals;

15 terminal communicating means for performing connection between said exchange and one or a plurality of said private telephones;

entire exchange controlling means for controlling said entire exchange;

exchange time stamp generating means for generating a time

20 stamp;

exchange voice data controlling means for acquiring said time stamp from said exchange time stamp generating means, imparting said time stamp to voice data obtained from said circuit switching means, and generating said voice data;

25 exchange external message controlling means for acquiring said

time stamp from said exchange time stamp generating means, imparting

said time stamp to an event obtained from said entire exchange controlling

means, and generating an external message; and

voice storage apparatus communicating means for performing

5   communication with said voice storage apparatus.

3. A voice storage apparatus of a voice storage system,

said voice storage system comprising:

a circuit switched network for performing communication by circuit

10   switching;

a first telephone which is connected to said circuit switched

network and performs voice communication;

an exchange which is connected to said circuit switched network

and performs voice switching;

15   one or a plurality of private telephones which are connected to

said exchange and perform voice communication; and

said voice storage apparatus which is connected to said

exchange, stores voice in at least speech communication recording by voice

data and an external message transmitted from said exchange, and

20   establishes synchronization between said voice data and said external

message transmitted from said exchange, thereby controlling storage of

speech communication voice,

said voice storage apparatus comprising:

exchange communicating means for receiving said external

25   message and said voice data transmitted from said exchange;

storage apparatus external message controlling means for performing control for fetching said received external message;

storage apparatus voice data controlling means for controlling said received voice data;

5   storage apparatus time stamp acquiring means for acquiring said time stamps from said external message and said voice data;

entire voice storage apparatus controlling means for establishing synchronization of said event by said private telephone obtained from said external message and said speech communication voice obtained from said

10   voice data and controlling said entire voice storage apparatus; and

storage apparatus voice storing means for storing said speech communication voice.

4. The voice storage apparatus according to claim 3, wherein

15   hold and transfer events are obtained from said external message by said storage apparatus external message controlling means, voice is obtained from said voice data by said storage apparatus voice data controlling means, said event and said speech communication voice are synchronized with each other by said entire storage apparatus controlling means based on said

20   time stamp obtained by said storage apparatus time stamp acquiring means, and the recording operation is started, paused, restarted or terminated based on a time of a predetermined operation such as hold or transfer.

5. A voice storage system comprising:

25   a circuit switched network for performing communication by circuit

switching;

a first telephone which is connected to said circuit switched network and performs voice communication;

an exchange which is connected to said circuit switched network

5 and performs voice switching; and

a voice storage apparatus which is connected to said exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange,

wherein reproduced voice is changed when said exchange

10 establishes synchronization between said voice data and said external message.

6. An exchange of a voice storage system,

said voice storage system comprising:

15 a circuit switched network for performing communication by circuit switching;

a first telephone which is connected to said circuit switched network and performs voice communication;

an exchange which is connected to said circuit switched network

20 and performs voice switching; and

a voice storage apparatus which is connected to said exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange,

reproduced voice being changed when said exchange

25 establishes synchronization between said voice data and said external data,

said exchange comprising:

network communicating means for performing connection with said circuit switched network;

circuit switching means for performing circuit connection between

5   said circuit switched networks or terminals;

terminal communicating means for performing connection between said exchange and one or a plurality of private telephones;

entire exchange controlling means for controlling said entire exchange;

10   exchange voice data controlling means for controlling voice data obtained from said circuit switching means and said voice data transmitted from said voice storage apparatus;

exchange DTMF detection/analysis controlling means for detecting/analyzing DTMF information from said voice data obtained from

15   said circuit switching means and converting said information into key information;

exchange external message controlling means for generating at least an external message from an event obtained from said entire exchange controlling means and said key information obtained from said exchange

20   DTMF detection/analysis controlling means;

exchange time stamp acquiring means for acquiring time stamps from said voice data and said external message transmitted from said voice storage apparatus;

exchange voice storing means for storing reproduced voice from

25   said voice data controlled by said entire exchange controlling means based

on control information and a time stamp obtained from said external

message; and

voice storage apparatus communicating means for performing

communication with said voice storage apparatus.

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7. A voice storage apparatus of a voice storage system,

said voice storage system comprising:

said voice storage system comprising:

a circuit switched network for performing communication by circuit

10 switching;

a first telephone which is connected to said circuit switched

network and performs voice communication;

an exchange which is connected to said circuit switched network

and performs voice switching; and

15 said voice storage apparatus which is connected to said

exchange, and changes reproduced voice by voice data and an external

message transmitted from said exchange,

reproduced voice being changed when said exchange

establishes synchronization between said voice data and said external data,

20 said voice storage apparatus comprising:

exchange communicating means for receiving said external

message and said voice data transmitted from said exchange;

storage apparatus external message controlling means for

generating at least an external message to be transmitted to said exchange;

25 storage apparatus voice data controlling means for controlling

reproduced voice to be transmitted to said exchange;

storage apparatus time stamp generating means for generating said time stamp;

entire voice storage apparatus controlling means for controlling

5   said entire voice storage apparatus; and

storage apparatus voice storing means for storing reproduced voice to be transmitted to said exchange.

8. A voice storage system comprising:

10   a circuit switched network for performing communication by circuit switching;

a first telephone which is connected to said circuit switched network and performs voice communication;

an exchange which is connected to said circuit switched network

15   and performs voice switching; and

a voice storage apparatus which is connected to said exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange,

wherein said exchange comprises:

20   a reproduced voice buffer for temporarily storing said reproduced voice to be transmitted to said circuit switched network; and

buffer clearing means for clearing unnecessary voice from said reproduced voice buffer based on a clearing request transmitted from said voice storage apparatus for changing said reproduced voice.

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9. A voice storage apparatus of a voice storage system,

said voice storage system comprising:

a circuit switched network for performing communication by circuit switching;

5   a first telephone which is connected to said circuit switched network and performs voice communication;

an exchange which is connected to said circuit switched network and performs voice switching; and

a voice storage apparatus which is connected to said exchange,

10   and changes reproduced voice by voice data and an external message transmitted from said exchange,

said exchange comprising:

a reproduced voice buffer for temporarily storing said reproduced voice to be transmitted to said circuit switched network; and

15   buffer clearing means for clearing unnecessary voice from said reproduced voice buffer based on a clearing request transmitted from said voice storage apparatus for changing said reproduced voice,

wherein said voice storage apparatus comprises:

buffer clearing means which transmits changed reproduced voice

20   to said exchange together with said clearing request and clears from said reproduced voice buffer reproduced voice having a time stamp preceding a time stamp imparted to said clearing request.

10. A voice storage apparatus of a voice storage system,

25   said voice storage system comprising:

a circuit switched network for performing communication by circuit switching;

a first telephone which is connected to said circuit switched network and performs voice communication;

5   an exchange which is connected to said circuit switched network and performs voice switching; and

said voice storage apparatus which is connected to said exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange,

10   said exchange comprising:

a reproduced voice buffer for temporarily storing said reproduced voice to be transmitted to said circuit switched network; and

buffer clearing means for clearing unnecessary voice from said reproduced voice buffer based on a clearing request transmitted from said

15   voice storage apparatus for changing said reproduced voice,

wherein said voice storage apparatus comprises buffer clearing means which transmits said clearing request to said exchange and clears all of reproduced voice remaining in said reproduced voice buffer, and is configured to transmit changed reproduced voice to said exchange upon

20   receiving a notification of termination of clearing said reproduced voice buffer.

11. An exchange of a voice storage system,

said voice storage system comprising:

a circuit switched network for performing communication by circuit

25   switching;

a first telephone which is connected to said circuit switched

network and performs voice communication;

an exchange which is connected to said circuit switched network

and performs voice switching; and

5   a voice storage apparatus which is connected to said exchange,

and changes reproduced voice by voice data and an external message

transmitted from said exchange,

said exchange comprising:

a reproduced voice buffer for temporarily storing said reproduced

10   voice to be transmitted to said circuit switched network; and

buffer clearing means for clearing unnecessary voice from said

reproduced voice buffer based on a clearing request transmitted from said

voice storage apparatus for changing said reproduced voice,

wherein, besides said reproduced voice buffer and said buffer

15   clearing means, said exchange further comprises:

network communicating means for performing connection with

said circuit switched network;

circuit switching means for performing circuit connection between

said circuit switched networks or terminals;

20   terminal communicating means for performing connection

between said exchange and a private telephone;

entire exchange controlling means for controlling said entire

exchange;

exchange voice data controlling means for controlling voice data

25   obtained from said circuit switching means and said voice data transmitted

from said voice storage apparatus;

exchange DTMF detecting means for detecting DTMF information from said voice data obtained from said circuit switching means and converting said detected information into key information;

5   exchange external message controlling means for generating at least an external message from an event obtained from said entire exchange controlling means and key information obtained from said exchange DTMF detecting means; and

voice storage apparatus communicating means for performing
10   communication with said voice storage apparatus.

12.   A voice storage apparatus of a voice storage system,

said voice storage system comprising:

a circuit switched network for performing communication by circuit
15   switching;

a first telephone which is connected to said circuit switched network and performs voice communication;

an exchange which is connected to said circuit switched network and performs voice switching; and
20   said voice storage apparatus which is connected to said exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange,

said exchange comprising:

a reproduced voice buffer for temporarily storing said reproduced
25   voice to be transmitted to said circuit switched network; and   ͦ

buffer clearing means for clearing unnecessary voice from said reproduced voice buffer based on a clearing request transmitted from said voice storage apparatus for changing said reproduced voice,

wherein said voice storage apparatus comprises:

5   exchange communicating means for receiving said external message and said voice data transmitted from said exchange, and storage apparatus external message controlling means for generating at least an external message to be transmitted to said exchange;

storage apparatus voice data controlling means for controlling
10   reproduced voice to be transmitted to said exchange;

entire voice storage apparatus controlling means for controlling said entire voice storage apparatus; and

storage apparatus voice storing means for storing reproduced voice to be transmitted to said exchange.

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13. A voice storage system comprising:

a circuit switched network for performing communication by circuit switching;

a first telephone which is connected to said circuit switched
20   network and performs voice communication;

an exchange which is connected to said circuit switched network and performs voice switching; and

a voice storage apparatus which is connected to said exchange, and changes reproduced voice by voice data and an external message
25   transmitted from said exchange,

wherein said voice storage apparatus transmits a part of the whole voice which can be a next reproduction candidate during transmission of said voice data, and said exchange stores said part of the whole voice which can be a next reproduction candidate concurrently with voice

5   reproduction, reproduces a part of said voice which has been already stored when changing said reproduced voice, and subsequently reproduces voice transmitted from said voice storage apparatus after changing said reproduced voice.

10   14. The voice storage system according to claim 13, wherein said part of the whole voice is transmitted, and said exchange stores said part of the whole voice and reproduces a part of said voice which has been already stored when changing said reproduced voice.

15   15. The voice storage system according to claim 14, wherein, when changing said reproduced voice, said exchange is configured to identify voice which should be reproduced from said part of said whole voice.

16. The voice storage system according to claim 14, wherein,

20   when changing said reproduced voice, a part of voice which should be reproduced is indicated to said exchange, and said exchange is configured to reproduce said indicated part of said voice.

17. An exchange of a voice storage system,

25   said voice storage system comprising:

a circuit switched network for performing communication by circuit switching;

a first telephone which is connected to said circuit switched network and performs voice communication;

5   said exchange which is connected to said circuit switched network and performs voice switching; and

a voice storage apparatus which is connected to said exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange, said voice storage apparatus being

10   configured to transmit a part of the whole voice which can be a next reproduction candidate during transmission of said voice data, said exchange being configured to store said part of the whole voice which can be a next reproduction candidate concurrently with voice reproduction, reproduce a part of said voice which has been already stored when changing

15   said reproduced voice and subsequently reproduce voice transmitted from said voice storage apparatus after changing said reproduced voice,

wherein said exchange comprises:

network communicating means for performing connection with said circuit switched network;

20   circuit switching means for performing circuit connection between said circuit switched networks or terminals;

terminal communicating means for performing connection between said exchange and one or a plurality of private telephones;

entire exchange controlling means for controlling said entire

25   exchange;

exchange voice data controlling means for controlling voice data obtained from said circuit switching means and said voice data transmitted by said voice storage apparatus;

exchange DTMF detection/analysis controlling means for

5   detecting/analyzing DTMF information from said voice data obtained from said circuit switching means and converting it into key information;

exchange external message controlling means for generating at least an external message from an event obtained from said entire exchange controlling means and said key information obtained by said exchange

10   DTMF detection/analysis controlling means;

exchange reproduction candidate controlling means for controlling data of a part of the whole voice which has been transmitted from said voice storage apparatus and can be a next reproduction; and

exchange voice storing means for storing reproduced voice

15   obtained from said voice data controlled by said entire exchange controlling means based on said external message information and simultaneously storing data of said part of the whole voice which has been transmitted from said exchange reproduction candidate controlling means and can be a next reproduction candidate.

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18. A voice storage apparatus of a voice storage system,

said voice storage system comprising:

a circuit switched network for performing communication by circuit switching;

25   a first telephone which is connected to said circuit switched

network and performs voice communication;

an exchange which is connected to said circuit switched network and performs voice switching; and

said voice storage apparatus which is connected to said

5   exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange, said voice storage apparatus being configured to transmit a part of the whole voice which can be a next reproduction candidate during transmission of said voice data, said exchange being configured to store said part of the whole voice which can

10   be a next reproduction candidate concurrently with voice reproduction, reproduce a part of said voice which has been already stored when changing said reproduced voice and subsequently reproduce voice transmitted from said voice storage apparatus after changing said reproduced voice,

wherein said voice storage apparatus comprises:

15   exchange communicating means for receiving said external message and said voice data transmitted from said exchange;

storage apparatus external message controlling means for generating at least an external message to be transmitted to said exchange;

storage apparatus voice data controlling means for controlling

20   reproduced voice to be transmitted to said exchange;

entire voice storage apparatus controlling means for controlling said entire voice storage apparatus;

storage apparatus voice storing means for storing reproduced voice to be transmitted to said exchange; and

25   storage apparatus reproduction candidate controlling means for

using said storage apparatus voice storing means to acquire a part the whole voice which can be a next reproduction candidate based on current voice data which is being transmitted by said exchange communicating means and transmit it to said exchange.

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19. The voice storage system according to claim 13, wherein said exchange is configured to reproduce voice transmitted from said voice storage apparatus following reproduction of said part of the voice which has been already stored based on a time stamp imparted to said part of said

10 voice and a time stamp imparted to voice transmitted from said voice storage apparatus after changing reproduced voice.

20. An exchange of a voice storage system,

said voice storage system comprising:

15 a circuit switched network for performing communication by circuit switching;

a first telephone which is connected to said circuit switched network and performs voice communication;

said exchange which is connected to said circuit switched

20 network and performs voice switching; and

a voice storage apparatus which is connected to said exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange, said voice storage apparatus being configured to transmit a part of the whole voice which can be a next

25 reproduction candidate during transmission of said voice data, said

exchange being configured to store said part of the whole voice which can be a next reproduction candidate concurrently with voice reproduction, reproduce a part of said voice which has been already stored when changing said reproduced voice and subsequently reproduce voice transmitted from

5   said voice storage apparatus after changing said reproduced voice, said exchange being configured to perform reproduction of voice transmitted from said voice storage apparatus following reproduction of said part of the voice which has been already stored based on a time stamp imparted to said part of the voice and a time stamp imparted to said voice transmitted from said

10   voice storage apparatus after changing said reproduced voice,

wherein said exchange comprises:

network communicating means for performing connection with said circuit switched network;

circuit switching means for performing circuit connection between

15   said circuit switched network or terminals;

terminal communicating means for performing connection between said exchange and a private telephone;

entire exchange controlling means for controlling said entire exchange;

20   exchange voice data controlling means for controlling voice data obtained from said circuit switching means and said voice data transmitted by said voice storage apparatus;

exchange DTMF detecting means for detecting DTMF information from said voice data obtained from said circuit switching means and

25   converting it into key information;

exchange external message controlling means for generating at least an external message from an event obtained from said entire exchange controlling means and said key information obtained by said exchange DTMF detecting means;

5   exchange reproduction candidate controlling means for controlling a part of the whole voice which has been transmitted from said voice storage apparatus and can be a next reproduction candidate;

exchange voice storing means for storing said voice data and simultaneously storing said part of the whole voice which has been

10   transmitted from said exchange reproduction candidate controlling means and can be a next reproduction candidate;

exchange time stamp acquiring means for acquiring time stamps from said voice data and a part of changed voice; and

exchange reproduction candidate reproducing means for

15   reproducing said part of said changed voice.

21. A voice storage apparatus of a voice storage system,

said voice storage system comprising:

a circuit switched network for performing communication by circuit

20   switching;

a first telephone which is connected to said circuit switched network and performs voice communication;

an exchange which is connected to said circuit switched network and performs voice switching; and

25   said voice storage apparatus which is connected to said

exchange, and changes reproduced voice by voice data and an external message transmitted from said exchange, said voice storage apparatus being configured to transmit a part of the whole voice which can be a next reproduction candidate during transmission of said voice data, said

5   exchange being configured to store said part of the whole voice which can be a next reproduction candidate concurrently with voice reproduction, reproduce a part of said voice which has been already stored when changing said reproduced voice and subsequently reproduce voice transmitted from said voice storage apparatus after changing said reproduced voice, said

10   exchange being configured to perform reproduction of voice transmitted from said voice storage apparatus following reproduction of said part of the voice which has been already stored based on a time stamp imparted to said part of the voice and a time stamp imparted to said voice transmitted from said voice storage apparatus after changing said reproduced voice,

15   wherein said voice storage apparatus comprises:

exchange communicating means for receiving said external message and said voice data transmitted from said exchange;

storage apparatus external message controlling means for generating at least an external message to be transmitted to said exchange;

20   storage apparatus voice data controlling means for controlling reproduced voice to be transmitted to said exchange;

storage apparatus time stamp generating means for generating said time stamp;

entire voice storage apparatus controlling means for controlling

25   said entire voice storage apparatus;

storage apparatus voice storing means for storing reproduced voice to be transmitted to said exchange; and

storage apparatus reproduction candidate controlling means for using said storage apparatus voice storing means to acquire a part of the

5   whole voice which can be a next transmission candidate based on current voice data which is being transmitted by said exchange communicating means and transmitting it to said exchange.